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OF THE
PATHOLOGICAL SOCIETY
OF
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December, 1900.

No. 2.

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Proceedings

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DR. ALFRED STILLÉ.

Resolution adopted by the Pathological Society of Philadelphia
at its stated meeting held November 8, 1900:

Resolved, That in the death of Dr. Alfred Stillé, one of its
Founders and early Presidents, the Pathological Society of Phila-
delphia has lost a member who was pre-eminent in his day in
claiming for pathology a position of fundamental importance in
the study of medicine, and who lost no opportunity of emphasizing
this belief in his lectures and by his writings.

That the profession of the United States has lost a member
whose great learning, scholarly accomplishments, and clear and
elegant diction placed him easily foremost among the medical
authors of the period in which he lived, and his writings among
the classics of medicine.

That a copy of these resolutions be sent to the family of Dr.
Stillé.

JAMES TYSON,
J. H. MUSSER,
CHARLES W. DULLES,
Committee.

DR. J. M. DA COSTA.

At a stated meeting of the Pathological Society of Philadelphia, held November 8, 1900, the following minute, presented by a committee appointed by the President, and consisting of Drs. Arthur V. Meigs, J. C. Wilson, and Henry Morris, was adopted, and a copy ordered sent to Mr. Charles F. Da Costa.

The Pathological Society of Philadelphia has received with profound sorrow the announcement of the death of its late eminent member, Professor J. M. Da Costa.

Dr. Da Costa was one of the founders of the Society, and always maintained a deep interest in its work and welfare. He served as its first Secretary, and in 1864, 1865, and 1866 he was its President. Like most of those who have attained distinction in clinical medicine, he devoted much time during the early years of his career to the study of pathology. His success as a clinical teacher and as a practitioner and his reputation as a diagnostician placed him in the foremost rank among the physicians of the last half of the nineteenth century. To brilliant professional attainments he added great learning and rare literary ability. His influence in professional life, and particularly among the young men with whom he came in contact, was the best.

Experimental Tuberculosis in Cats.

JOSEPH MCFARLAND, M.D.

The well-known fact that feline animals rarely suffer from spontaneous tuberculosis, and that among captive animals, which suffer far more from tuberculosis than others, wild cats are rarely infected, suggested to me that it would be interesting to observe the effects of experimental inoculation with several different tubercle bacilli. For the purpose three bacilli were selected, the first being an avian tubercle bacillus, which came to me from Dr. M. P. Ravenel, who secured it from Professor Westbrook, of Minneapolis. Further than this I do not know the lineage of the organism. It

has the morphologic and tinctorial characteristics of the tubercle bacillus, but grows on simple nutrient agar-agar as well as upon glycerin agar-agar. Its effects upon guinea-pigs and rabbits have not been studied since I have been possessed of it. The second was a tubercle bacillus isolated from human tuberculous sputum by Professor Theobald Smith, of Harvard University. It was of low-grade virulence. The third organism was a bovine tubercle bacillus of marked virulence, also isolated by Professor Smith. All three organisms had been frequently transplanted to fresh glycerin agar-agar in the laboratory, and were kept constantly at 37° C. in the dark.

On May 1, 1900, a bouillon suspension of each culture was made, and one cubic centimeter administered by intraperitoneal injection to three kittens respectively. The kittens had been born in the laboratory, were apparently perfectly healthy, and were about two-thirds grown at the time of inoculation. The kittens all lived until July 24, 1900, when it became desirable to get rid of them, and they were chloroformed. This unnatural death somewhat limits the importance of the experiment, as it is not impossible that all the cats might have lived much longer and recovered. However, before their destruction it had been noticed that the kitten which received the bovine bacillus did not grow as fast as its fellows, seemed weak, had a large belly, and was not well.

Careful necropsies were made upon the animals, the organs being studied macroscopically and microscopically. The results were as follows :

Kitten I. White and gray, gray about the eyes. Infected with the avian bacillus. The cat was well developed, had been well, and was apparently in good condition.

The necropsy showed the abdominal and thoracic organs to be quite normal in appearance. Indeed, the only abnormalities present to the unaided eye were a cheesy mass the size of a small pea in the spleen, some enlarged retroperitoneal glands, and a mottled appearance of the surface of the kidneys, suggesting the presence of subcapsular tubercles.

When the microscopic examination was made it was found that the splenic lesion was tuberculous and contained myriads of bacilli which could be easily demonstrated by Gabbet's method. The en-

largement of the retroperitoneal glands may have resulted from the infection, but there were no tubercles and no bacilli present. The mottling of the kidneys seemed to depend in part upon irregularities in the circulation. The microscope revealed small tubercles, chiefly in the subcapsular zone and labyrinth of the kidney.

Kitten II. Black. Infected with the human bacillus. The cat was well-developed, had been well, and seemed to be in good condition. When the body was opened the abdominal and thoracic organs were for the most part normal. There were enlarged retroperitoneal lymphatic glands, and, as in the other case, the kidneys presented a mottled appearance, as if numerous cortical tubercles were present.

When studied microscopically it was found that the kidneys contained considerable numbers of subcapsular tubercles and round-cell infiltrations descending from the cortical areas along the medullary rays.

Either the tubercle bacilli present were very few in number, or our methods were faulty; but no organisms were demonstrable. The tubercles were quite typical in appearance, in many of them distinct giant cells being present.

Kitten III. Gray and white, white about the eyes. Infected with the bovine bacillus. The cat was small in size, the coat rough, the belly large. It had been observed for some time that the animal was unwell.

When the abdomen was opened it was found to contain a considerable amount of pus of a thick, curdy character. The pus was at once stained for tubercle bacilli, but none were found. There was a wide-spread tuberculosis of the peritoneum and viscera. Both parietal and visceral peritoneums were studded with tubercles, here and there aggregated in good-sized groups. In the great omentum there was a tuberculous mass as large as a pigeon's egg. The mesentery contained many tubercles, and its glands were enlarged and tuberculous. The liver was enlarged, fatty infiltrated, focally hemorrhagic, and evidently occupied by richly distributed tubercles. The spleen was much enlarged, its capsule thickened, and its substance tuberculous and hyperplastic. The kidneys showed grayish nodules with all the appearances of tubercles.

The disease was not confined to the abdomen, but had also spread to the thorax and the lungs, and also the pleura contained tubercles. The whole picture was typical of wide-spread chronic tuberculosis.

The microscopic study of the organs confirmed fully the naked-eye appearances, and tubercles were found in all the organs, bacilli being demonstrated in the greater number of them.

The histologic changes seem to be more destructive than might be inferred from the chronicity of the case, the amount of leukocytic infiltration and necrosis being considerable.

The experiment proves, therefore, that it is possible to infect young cats with avian, human, and bovine tuberculosis by intraperitoneal inoculation. It seems to indicate that the probability of fatal infection with the avian and human bacilli is slight, as in the cases experimented upon the progress of the disease was either very slow or had in large part recovered—a bare probability, as the organs were too normal in appearance to warrant the view that they had once been tuberculous.

The bovine bacillus, which, according to Smith's experiments, is much more likely to be virulent, and was much more virulent than either of the others employed, is capable of bringing about most extensive tuberculous disease.

It is interesting to observe that in the animals infected with the avian and human bacilli, in which there were so few changes, the disease had localized itself largely in the kidneys, while in the animal infected with the bovine bacillus and showing wide-spread lesions the kidneys were much less affected. This is too suggestive to pass without remark, though it may have been a purely accidental occurrence. It is not impossible that the bacilli being taken to the circulation by the lymphatics, and finding no suitable soil for growth in the tissues, were, on their way to elimination by the kidneys, met with some unexpected obstacle and developed in these organs. This speculation, however, carries with it all the doubts that surround the excretion of bacteria by the kidneys, and is offered more as a suggestion than as an explanation.

September 27, 1900.

**The Dissemination of Tubercle Bacilli by Cows in Coughing
a Possible Source of Contagion.**

MAZŮCK P. RAVENEL, M.D.

(From the Laboratory of the State Live-stock Sanitary Board of Pennsylvania.)

At the present day it is the general opinion of investigators and physicians that the chief method of the dissemination of tuberculosis is the inhalation of dried tuberculous sputum, which becomes pulverized, and is carried about by currents of air or raised from its resting-place in the cracks of floors—for instance, through sweeping and such like processes. The experiments of Cornet, made under the direction of Koch, are strongly corroborative of this opinion. The habit of indiscriminate spitting by persons suffering from consumption has until very recently been accepted, then, as the chief means by which the contagion was spread, and such indeed is the general opinion held to-day. Flügge has recently taken exception to this opinion, and holds that the spread of tuberculosis is due mainly to the inhalation of minute particles of sputum which is brought to a state of fine division during the act of coughing. He believes that these minute particles float in the air for some time and may be carried by very slight currents. He brought forward as confirmatory of this opinion experiments by himself and his assistant, which are now well known. In this country Klebs has by similar experiments shown that during the act of coughing minute particles of sputum, oftentimes containing tubercle bacilli, are thrown out. Dr. Curry, of Boston (*Boston Medical and Surgical Journal*, October, 1898, vol. cxxxix., No. 15), at the suggestion of Klebs, carried out experiments in twelve cases of tuberculosis with a view of determining what degree of danger there might be from this source. He examined the mouth-fluid of patients whose sputum revealed the presence of tubercle bacilli, and in nine out of twelve cases the bacilli were found at some time during the day, though usually in very small numbers. In three of the cases many bacilli were found at nearly every examination. As a rule they were most plentiful in the early morning. He also suspended glass plates before these

patients at distances of from one to three feet. By this method one-half of the cases gave negative results. All of them, however, had low cough and were in the habit of keeping the lips closed during coughing. Of the six patients who gave positive results, all had a loud cough and kept the mouth open during coughing. He concludes from his experiments that there is not only a possible, but even a probable danger from this source, but he considers that Flügge has greatly exaggerated this danger. He very aptly calls attention to a point which seems to have escaped Flügge entirely—namely, that these small particles of sputum are likely rapidly to become dry, in which condition, of course, they act just as so much dried infectious sputum. Wherever particles of sputum which contain virulent tubercle bacilli are thrown out a possible source of danger must inevitably be recognized.

In a series of studies having for their object the relation of bovine tuberculosis to human health, I was led to see if it were not possible that cows in the act of coughing would likewise expel small particles of tubercular material rich in tubercle bacilli. The opinion is widely accepted that cows swallow all their sputum and do not eject it to any extent. Various methods for the collection of sputum from the trachea and larynx of cows have been tried, with the idea of using it for diagnostic purposes. Pols proposed the insertion of a canula into the trachea for the collection of mucus, but this has not proved satisfactory. Nocard has suggested the injection of veratrin or eserine in order to increase secretion from the bronchial tube, but this likewise has been unsuccessful. The use of a swab inserted down the trachea by means of a long handle, as proposed by Greffier, has given better results. The method used in my experiments has been much more simple and easily carried out. It consists in the use of an ordinary nose-bag, near the bottom of which is placed a shelf of soft pine wood, which is sterilized by steam heat each time before using. Such a nose-bag may be left on the animal for several hours at a time, the amount of material collected varying greatly in different animals and in the same animal from day to day. The smallest particles ejected by the cow during the act of coughing adhere to this piece of soft pine wood, which absorbs most of the fluid portion, leaving the more solid particles standing in relief,

so that they can be easily detected by the naked eye or by a low magnifying glass. From this they may be removed with a platinum needle to a cover-slip and examined under the microscope. By this means I have been able to detect tubercle bacilli in the bronchial secretions of every tuberculous cow in which it has been tried. In one animal the amount of secretion was exceedingly minute, and even after the nose-bag had been kept on her for from three and a half to four hours there would often be only a few particles of matter not larger than the head of a pin, but they were almost always exceedingly rich in tubercle bacilli. In this way what might be expected theoretically has been practically demonstrated—namely, that in the act of coughing cows as well as men atomize, so to speak, their sputum and project it into the air in minute particles, which may float for a considerable period of time. Secretion collected in this way has been inoculated into the peritoneal cavity of guinea-pigs, and even when the bacilli could not be demonstrated under the microscope a considerable portion of positive results have been obtained. I do not mean to advocate this method as a means of diagnosis, although my experiments warrant me in believing that tubercle bacilli can always be found in the sputum of tuberculous animals at some time, but doubtless in early cases it would require a large number of examinations, and with the well-established use of tuberculin it would seem unnecessary to resort to this means. The danger of infection by means of this atomized sputum, as far as mankind goes, is practically confined to those in constant contact with the animals, but for other animals in the same stable these particles must be considered a source of danger.

Of thirty-four examinations carried out on five different animals, tubercle bacilli were detected by microscopic examination twenty times. The number of bacilli found varied greatly, but one of the cows constantly coughed up a tenacious mucus in which the numbers approached those seen in human sputum from advanced cases.

During a period of time extending over forty-three days mucus from two cows was collected by means of the nose-bag on eighteen days, and inoculated into the peritoneal cavity of forty-five guinea-pigs. Of these, twenty-three died within a few days—most

of them from peritonitis, at a period too early for the development of tubercular lesions. Subtracting these, we have remaining twenty-two animals, eleven of which, or 50 per cent., became markedly tuberculous.

By means of a special nose-bag guinea-pigs were exposed directly to the breath of cows in the sputum of which tubercle bacilli had been found. Fourteen pigs were exposed for varying periods of time, as follows:

2 guinea-pigs for 2 hours on 1 day.	2 guinea-pigs for 5 hours on 2 days.
2 " " 2½ " 1 "	2 " " 15 " 5 "
2 " " 3 " 1 "	2 " " 27 " 9 "
2 " " 3 " 1 "	

These animals were killed after several weeks, but no evidence of tuberculosis could be detected in any of them.

The cows on which the examinations were carried out were all marked cases of tuberculosis, though only one was in the last stages of the disease. One animal which gave a large proportion of positive results lived for more than two years after the experiment.

November 8, 1900.

November 8, 1900.

Two Cases of Glioma of the Retina.

G. E. DE SCHWEINITZ, M.D.,

AND

E. A. SHUMWAY, M.D.

As a certain amount of interest always attaches itself to glioma, the following cases are deemed worthy of record:

CASE I.—L. E., a male Hebrew child, aged three and a half years, was brought to one of us (Dr. de Schweinitz) on the 29th of June, 1900, for an opinion on the left eye, which was blind, painful, and prominent.

History. There was nothing important in the clinical history of the child, who is the only one, and who had been in sturdy health until recently, when great restlessness developed, particularly at night, doubtless due to pain in the affected eye. The right eye was normal in all respects, as far as could be ascertained

by ophthalmoscopic examination. Eight months prior to his visit, that is to say, when the child was not yet three years old, a white spot appeared in the pupil of the left eye, and the child was taken to several of the hospitals of this city, but failed to follow the advice there given. Within the last few months the eyeball became distended and masses began to appear in the orbit.

Examination showed a greatly enlarged eyeball, a wide pupil, behind which all interior examination was obscured by the cataractous lens. The episcleral and posterior conjunctival vessels were enormously enlarged and distended. The tension of the eyeball was + 3. Below and to the outer side, and apparently adherent to the floor of the orbit, were several large episcleral nodules. The diagnosis of intraocular growth, almost certainly glioma, in the stage of extraocular tumor formation, was readily made, and evisceration of the contents of the orbit was advised. This operation was performed on the 2d of July at the Jefferson College Hospital, the entire contents of the orbit with the periosteum being removed in a single mass.

Convalescence from this operation was uneventful, and the child was dismissed from the hospital about the 15th of August. There is no note that there was any recurrence of the growth at this time. On the 15th of September of the present year the child, after a day or two of great restlessness, was seized with convulsions and was hurriedly conveyed to the Pennsylvania Hospital. The convulsions ceased very soon, but recurred the same evening, when the child was again taken to this hospital, where he died in a few hours. The note on the book of the hospital is the following: Unilateral spasms, clonic in character, and coming on in paroxysms; internal strabismus of the right eye; twitching of the fingers and toes; rapid, feeble pulse; marked cyanosis; hurried respiration." Unfortunately an autopsy was not obtained. On interviewing the father as to recurrence *in loco*, it was ascertained from him that the orbital cavity had healed completely; but that a small button, as he expressed it, was visible at the bottom of the pit. This may or may not have been a recurrence, as it is common to find a small mass of granulation in the orbit after exenteration, and we are inclined to think that this should be so regarded.

The clinical symptoms point to intracranial involvement or metastasis. This is rendered the more likely, inasmuch as the brain, after the cranial and facial bones, is the most frequent region for the appearance of metastatic deposits.

The eyeball was placed in a 5 per cent. formalin solution, and subsequently cut in two, one half being mounted in glycerin jelly, and the other embedded in celloidin, and cut in sections parallel to a horizontal plane passing through the cornea and optic nerve. Its anteroposterior diameter measures 26 mm., the vertical 22 mm., and the horizontal 22 mm. The posterior half is filled with a grayish-white mass, which has broken through the sclera, and forms an extraocular nodule, closely investing the optic nerve at its entrance into the ball. The anterior part of the tumor mass stains less well than the posterior. It is composed of a mass of round cells, the majority of which have undergone degeneration, and shows in places dense deposits of lime salts. Certain portions of the growth, especially the better staining ones, show the usual tubular arrangement which glioma cells assume: thick mantles of well-preserved cells surrounding the bloodvessels and projecting into the other masses of cells which have lost their staining power. The two portions are separated partially by the proliferating pigment epithelial layer of the retina, and represent respectively the original retinal growth, and the secondary deposit, in the choroid. The retina is attached as far back as the ora serrata; here it bends abruptly inward, and widens out into the tumor mass. The latter springs from the inner nuclear layer, as the outer nuclear layer continues for a short distance undisturbed. The bloodvessel walls are much thickened, and show hyaline degeneration to a marked degree. The anterior part of the globe shows the effect of the increased tension, all of the tunics being relatively thin. The ciliary processes are stretched forward and are atrophied; there are also marked atrophy of the iris, and a well-developed intercalary staphyloma. The cornea is thinned and staphylomatous, but is otherwise normal. The lens shows beginning cataractous changes in its cortical layers. Both anterior and posterior chambers are quite deep, but the filtration angles are blocked by the firm adhesion of iris and cornea. The optic nerve is replaced partly by the infiltrating tumor cells, which have passed along the

lines of the nervous bundles and also through the intervaginal space. The uninfiltrated part of the nerve shows a conversion of its entire structure into hyaline connective tissue. The sclera is very much thinned, and its fibers are separated by lines of glioma cells. None of the rosetts described by Wintersteiner are present in the tumor. Pieces of orbital tissue were also cut for microscopic examination. They show extensive infiltration with glioma cells; in places this infiltration is diffuse, in others the cells are grouped in dense masses, and exhibit a decided tendency to cell death. In both the orbital and intraocular portions of the growth there are a great many karyokinetic figures. These are especially notable around the bloodvessels, where the cell growth is most rapid. Sections of the lacrimal gland show mononuclear, round-cell infiltration around the bloodvessels, and between the acini, but no glioma cells are present.

CASE II.—E. B., aged nine years, male. Patient of Dr. George E. Rohrer, of Lancaster, Pa. The boy was first seen by Dr. Rohrer in February, 1900, but the ocular symptoms appeared one year before. At this time the eye became weak and watery, and some pain was complained of, but the symptoms subsided in a week's time. Similar attacks recurred, however, and several months later the pupil was found dilated ad maximum, and vision was reduced to zero. In the back part of the eye whitish patches were seen, and, later, the whole of the retina presented a yellowish-white appearance. Despite the occurrence of these attacks, the boy attended school regularly until, at Christmas, the eye began to bulge. When seen by Dr. Rohrer there was marked exophthalmos, the tension of the globe was elevated, and vision was nil. The anterior chamber was filled with a yellowish mass, which prevented any view of the fundus. Enucleation was immediately advised and performed. During the operation an attempt was made to cut well back of the optic nerve entrance, and, as the orbit was involved, the tissue was removed as far as it seemed to be diseased. There was, however, a very rapid recurrence, which soon filled the orbital cavity, and the boy died about three months later.

The eyeball was placed in alcohol at the time of enucleation, and was subsequently frozen and cut in a horizontal plane. The

macroscopic specimens show that the globe is filled with a grayish-white mass, the central part of which is necrotic. In addition to the intraocular mass there is a large extraocular nodule, the sclera running as a narrow band, with a pigmented inner border, between the two portions. The globe has become shrunken and distorted in the alcohol, presenting a ring-shaped depression in the ciliary region, which allows the cornea to project forward in the form of a nipple. The anterior chamber is filled with a yellowish-white mass; the lens is crowded forward in front of the ciliary processes and jams the iris against the cornea at its periphery. The globe measures 24 mm. in its anteroposterior diameter, 21 mm. vertically, and 21 mm. horizontally.

Sections stained with hematoxylin and eosin show macroscopically that the mass is composed of two parts—a poorly staining one, occupying the anterior part of the eyeball, and a well-staining mass posteriorly, which includes the extraocular nodule. The poorly staining portion, when examined under the microscope, is seen to be made up of a mass of necrotic tissue, the greater part of its cells refusing the stain. Here and there are groups of round cells which stain faintly with hematoxylin, the nuclei of which are undergoing fragmentation. In contrast with this mass of unstained tissue the bloodvessels stand out prominently, their lime-infiltrated walls staining dark blue with the hematoxylin. This is evidently the original tumor. The retina can be traced only as a line of degenerated tissue, extending inward from the ora serrata, and the growth has advanced too far to determine the layer of the retina from which it has sprung. The posterior well-staining portion represents the secondary infiltration of the choroid. It shows moderately well the tubular arrangement typical of glioma. The bloodvessel walls have undergone marked hyaline change and the mass is infiltrated with scattered masses of pigment, part of which represent the remains of the stroma cells of the choroid, but the greater part is evidently the result of previous blood extravasation. The sclera is infiltrated, and the optic nerve is entirely replaced by the growing tumor. Anteriorly the ciliary bodies are stretched forward and are quite atrophic. The lens is pushed forward in advance of them; it shows extensive cataractous changes: proliferation of the capsule epithelium, separation of the

fibers by a coagulated fluid, with destruction of individual fibers. The iris is pressed firmly against the corneal periphery, entirely blocking the filtration angle, and is to a high degree atrophic. The cornea is stretched, but is otherwise normal, neither Descemet's nor Bowman's membrane showing any break in its continuity. The mass in the anterior chamber is composed of degenerated glioma cells, only a few retaining their staining power. In no part of the tumor mass are there any of the so-called rosets.

In connection with these cases of glioma of the retina, which present no features distinguishing them from the many cases now on record, it may be well to review the subject of the etiology of the growth in question, especially as there has been little mention in American literature of the very animated discussion that has been called forth on the Continent by Wintersteiner's monograph.¹ For many years the scientific world has been divided into two camps—those defending Virchow's views,² that glioma develops from the neuroglia or supporting tissue of the retina—among them Hirschberg,³ Iwanoff,⁴ Knapp,⁵ etc.; and, on the other hand, those who take the ground that it is a round-cell sarcoma, or plexiform, or tubular angiosarcoma (Delafield,⁶ Vetsch,⁷ Straub,⁸ Mazza,⁹ Van Duyse,¹⁰ Becker¹¹). Virchow's stand-point has recently received strong support from Greef,¹² who, by means of the Golgi-Cajal silver method, was able to show the presence of long protoplasmic processes in connection with the cells, thus demonstrating their neuroglial character. These results were confirmed by Hertel,¹³ although he did not succeed when employing the Weigert neuroglia method. Both Greef and Hertel found also numerous ganglion cells, and the former has proposed to call the growth neuroglioma ganglionare, following Klebs,¹⁴ who had chosen the name of neuroglioma, not only for the retinal tumors, but also for the gliomata of the central nervous system.

Wintersteiner, however, lays especial weight upon the epithelial rosets, described by Flexner,¹⁵ Eisenlohr,¹⁶ Becker,¹¹ and Van Duyse,¹⁰ which he found in 11 out of 26 cases of glioma investigated by him. These peculiar structures consist of closed or partly closed rings of 10 to 12 narrow, wedge-shaped, cylindric cells, the lumen of the roset being lined by a distinct basement

membrane. In places, rod-shaped protoplasmic processes extend into the lumen, through the basal membrane. He considers that these cells, with their processes, are rudimentary rod and cone cells, that the basal membrane represents the *limitans externa retinæ*; and as he found them in a beginning glioma nodule in the external nuclear layer, where they could not be present normally, he believes that glioma arises from embryonally misplaced cells of the neuro-epithelial layer of the retina. He described these roset formations in two malformed eyes, which were free from tumor formation, and in one case he was able to show a direct transition of the cells to the rod-cone fibers and to the *limitans externa retinæ*. He further mentions that Salzmann has also described similar rosets in an eye with a conus below the optic nerve entrance, and as clinical observation permits no doubt as to the influence of congenital disturbances upon the production of the tumor, Wintersteiner suggests the name of neuro-epithelioma retinæ. That the rosets were found in only one-third of his cases was not considered important by him, as it is not necessary that the misplaced cells should, in every case, reach the height of development necessary to produce the fully formed rosets. He does not deny the presence of glia cells in the growth, but claims that they do not decide the nature of the growth, because such cells are present normally, and the supporting tissue may be increased without, however, constituting the essential element of the tumor.

On the other hand, Ginsberg¹⁷ has described groups of cells in the displaced and partly detached retina, in the micro-ophthalmic eye of a new-born child, which showed transition to the cells of the *pars ciliaris retinæ*. Such rosets have also been found in micro-ophthalmic, or otherwise malformed eyes, by Dötsch,¹⁸ Bernheimer,¹⁹ Pichler,²⁰ Bock,²¹ Rubinski,²² and Helfreich.²³ Ginsberg thinks that Wintersteiner's claim that the neuro-epithelium is involved in the formation of the roset has not been proven, but that they more closely resemble the cells of the *pars ciliaris retinæ*, and as the latter are found before the division of the cells of the future retina into spongioblasts and neuroblasts, he believes that the origin of the growth must be from cells which have remained upon this low stage of embryologic development. In any

case the cells composing the tumor are epiblastic in origin, and not mesoblastic, so he suggests the name "carcinoma retinae" in place of neuroepithelioma retinae. Pichler's work confirms that of Ginsberg, and his conclusions are identical.

As Axenfeld²⁴ remarks in his review of the subject in Lubarsch and Ostertag's *Ergebnisse* (1898), from which we have freely quoted, the purely sarcomatous conception of the tumor has certainly lost very much ground. Wintersteiner argues that its origin, in many instances, from the outer nuclear layer, where there are no mesodermal elements, precludes the use of the term sarcoma. Treacher Collins²⁵ also expresses himself strongly against this term. He shows that in the fourth fetal month the retina is composed of the same cells as those in glioma. That this morphologic proof of the epithelial nature of the growth is further supported by the clinical facts that glioma appears usually before the sixth year, that metastases in the liver are rare,* while the propagation in the lymph channels is the usual one; that sarcoma is never bilateral, and that histologically the glioma cells are poorer in protoplasm, show fine protoplasmic processes, and are much more inclined to degenerate.

The discussion upon the subject is evidently not ended, but the newer work points toward the greater probability of the epithelial character of the growth. If the findings of Greef and Hertel be still further confirmed, especially by other methods, its neuroglial origin must be admitted. The silver method, however, is too uncertain in its results, and we must consider this proof as not yet thoroughly established.

* Metastases in the liver are not exactly rare. Thus, in a recent paper by F. M. Wilson and Edgar S. Thompson (*Archives of Ophthalmology*, January, 1900), there is recorded a case of glioma of the retina and brain metastasis with autopsy, and a review of the literature. In a total number of 530 cases metastases were recorded 61 times, and of these 61, 7 appeared in the liver, the only other regions of the body more frequently affected by metastatic deposits being the cranial and facial bones, the brain, the lymphatic glands, and the parotid gland.

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November 22, 1900.

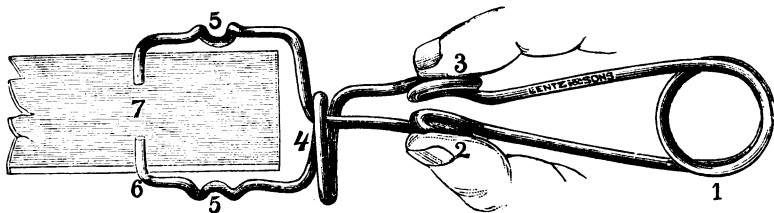
A Combined Slide and Cover-glass Forceps.

L. NAPOLEON BOSTON.

The forceps I present for your consideration this evening is by no means new, but has been in use by me for the past two years, during which time its application to general microscopy has pointed out its many defects. To perfect this forceps in every possible way it has been necessary to have a forceps constructed showing each of the many modifications which experience alone could suggest. A study of the various developmental stages of the forceps

I now present is of interest, and the need of such a forceps has long been apparent to every laboratory worker. Heretofore the writer has employed two instruments for this purpose, viz., a Stewart cover-glass forceps and his own slide forceps (*Journal of the American Medical Association*, September 8, 1900, p. 641).

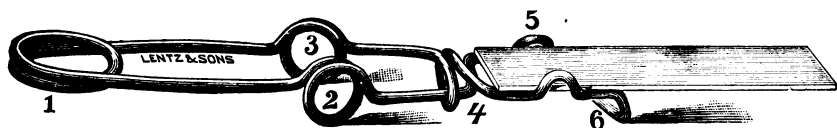
FIG. 1.



At the suggestions of Drs. W. M. L. Coplin and E. B. Wenner I have modified the said slide forceps so as to give it the double function of both a slide and cover-glass holder, and have adjusted the lateral clamps (5) so as to enable one to grasp the slide from off the table with the forceps. (Fig. 1.)

This forceps is made from a continuous piece of brass wire, which is nickel-plated. The accompanying figures will serve to

FIG. 2.

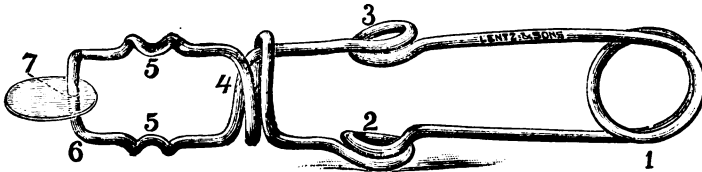


illustrate the forceps in the act of picking the slide from off the table (1), and with the slide locked in position (2); while Fig. 3 represents it as a cover-glass forceps.

It will be seen that the wire is coiled so (1) as to form a spring which serves to hold either slide or cover-glass within the jaws of the forceps. The left lateral coil (2) is slightly flattened to form a firm rest for the forceps when the cover-glass is in position (Fig. 3), and with its fellow coil (3) rests are formed to support the forceps when the slide is in position (Fig. 2). These coils also serve as

convenient places for the thumb and index finger during manipulation. The coil (4) at the base of the jaws is simply to hold them in position. The lateral clamps (5) at the center of each jaw are bevelled so that in springing against the margins of the slide it is lifted from the surface on which it rests and firmly fixed between the clamps. The inner surface of this clamp is provided with a groove so as to accommodate slides of various thicknesses. Beyond this point the wire supports the slide, and at 6 it is bent to form a support for the forceps when the slide is locked in position (Fig. 2). At this point the two ends of the wire are carried inward to meet at the center of the jaws (7), and between these points the cover-glass is held (Fig. 3).

FIG. 3.



By this forceps the slide is lifted from the table, properly adjusted within the forceps' jaws, so as to make its surface level, and thus preventing liquid from changing its position when placed on the slide—by the use of one hand—(Figs. 1 and 2) a heretofore unaccomplished end by a slide forceps. A double value is attached to this forceps in that it is equally serviceable as a cover-glass holder, necessitating but a single instrument for general laboratory work.

October 25, 1900.

Improved Drawing Eye-piece. New Microscope Stand. New Microtome Clamp. Improved Knife Case. Improved Dissecting Microscope.

W. M. L. COPLIN, M.D.

Dr. Coplin showed (1) a modification of a drawing eye-piece described by Leiss (*Zeitschrift für Wissenschaftliche Mikroskopie*, 1895, xii.). The modification consisted in arranging the color

glasses in attached discs which rendered them easily used and prevented their loss and accidental breakage.

(2) A Dölken microscope stand with modified form of Leitz mechanic stage. The advantages claimed for the combined instruments are (*a*) the extremely large stage, with area for examination of plates and large brain sections, (*b*) mechanic stage movement, covering an area of two and a half inches vertical, and a like distance horizontally.

(3) A new clamp for the Minot microtome, permitting of permanent orientation of objects on the block which is held in the new clamp.

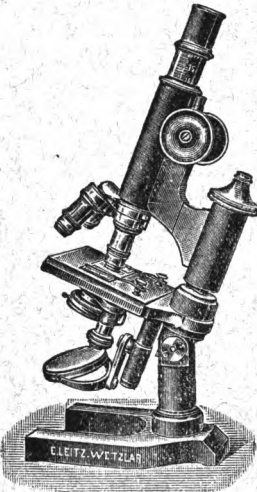
(4) Case for Minot knives, which prevents the edge from coming in contact with anything liable to dull them.

(5) Dissecting microscope with rotating lens-carrier so arranged as to deliver lenses in focus and to permit of use in movement of lenses in searching large fields.

November 8, 1900.



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